KAISER - HILL
COMPANY

INTEROFFICE MEMORANDUM

DATE: November 9, 2004

TO: Building 707 Project File and Administrative Record

FROM: Dyan Foss

SUBJECT: Building 707 Closure Project Contaminated Component/Building Shell Removal Evaluation

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Building 707 is a two-story structure, constructed in 1967 and used for plutonium manufacturing. Buildings 731, 732, and 778 were support facilities for Building 707 operations. Decommissioning has been on going in the project since October 2001. During decommissioning, several areas were identified that would not be decontaminated to the unrestricted release criteria. These areas include the following:

- Portions of 707 and 778 slabs;
- Below grade pits and basements associated with Buildings 707, 731, 732, and 778;
- Two metal sections in the Building 707 overhead;
- Embedded piping associated with modules H and A and C-pit in Building 707; and
- A small area on the roof of Building 707 with potential PCB contamination, documented in Regulatory Contact Record dated September 20, 2004.

The disposition of these areas have been documented in Regulatory Contact Records with the State of Colorado and 707, 731/732, and 778 demolition work packages. This memo documents the evaluation outlined in Section 4.4.7.1 of the Building 707 Closure Project Decommissioning Operations Plan for all of the components/portions of the building shell with residual contamination.

Relative Cost – The relative cost for removing the portions of the slab, below grade areas and embedded piping prior to demolition is approximately two to four times greater than removing these components during demolition. The difference in cost is due to the extensive hoisting and rigging requirements, and the increased time required to prepare the facility. In addition to cost, removal prior to demolition would increase risks to workers from hoisting, rigging, and falls and increases the potential for contamination spread to the soil below the slab. The metal sections in the overheads and roof area have no relative cost as the areas could not be removed prior to demolition for structural reasons.

Structural Evaluations – Most of the subject areas do not have structural considerations; however, the metal sections in the Building 707 overheads were evaluated by engineering, and it

was determined that these components could not be removed prior to demolition due to structural constraints. The portion of the 707 roof could also not be removed prior to demolition due to the roof thickness. The complete demolition work package will be reviewed and signed off by a structural engineer.

Air Emissions - An analysis of the potential radionuclide emission modeling was completed for the Building 707 contaminated shell/component demolition. CAP88-PC was used for the model to estimate the dose to the most impacted public receptor. The highest modeled dose was 3.6E-07 mrem/year, which is far below the monitoring threshold of 0.1 mrem/year in the Site Integrated Monitoring Plan and the 10 mrem/year standard from 40 CFR 61, Subpart H. Inputs to the CAP88-PC model included the following: total activity for weapons grade plutonium of 147.257 microcuries; a 10% damage ratio (assumed 10% of the fixed contamination will become removable during the demolition/remediation activities); and a 10^{-3} emission factor (both taken from the peer-reviewed Building 776/777 Air Modeling Technical Document).

Air monitoring will be performed during demolition in accordance with the requirements of the Site IMP. The existing RFETS Radioactive Ambient Air Monitoring Program (RAAMP) sampler network will be used for ambient air monitoring during removal activities. The RAAMP sampler network continuously monitors airborne dispersion of radioactive materials from the Site into the surrounding environment. Work area monitoring will be conducted for worker health and safety and dictated by Industrial Hygiene and Radiological Operations.

Dust Emissions - An analysis of the potential emissions was completed by the air quality group as indicated in the previous section. Dust and contamination control will include the application of encapsulant, water during removal, and placement of the contaminated materials in waste containers as soon as the material is size reduced. These measures, as applicable, are included in the demolition work package. In addition, there is a specific dust suppression plan for the demolition of B707 that has been included in the demolition work package.

Impacts to Surface Water - It is anticipated that this activity will have a minimal potential for impacting surface water. In accordance with the RFETS Erosion Control Management System manual, the demolition area has been inspected to identify potential pathways for migration of contaminants, including roof and floor drains and foundation drains. Surface water (i.e., stormwater run-on and run-off) will be controlled using standard construction methods, including hay bales, waddles and the blocking of stormwater drains. Placement of surface water controls is a prerequisite in the demolition work package.

Impacts to Migratory Birds - There are no active birds nests associated with the 707 Closure Project facilities, and continual walk downs will be completed until the demolition/removal is complete.

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